Interoperability

The capability of two or more hardware devices or two or more software routines to work harmoniously together. For example, in an Ethernet network, display adapters, hubs, switches and routers from different vendors must conform to the Ethernet standard and interoperate with each other.

Although executable applications must conform to the CPU standard they run in, this type of compliance is not known as interoperability. The term tends to be widely used with networking equipment. See interoperable.

Three Related Articles from CMP's TechWeb

- Worldwide E-Learning To Draw Nearly $53 Billion By 2010

- Novell Calls For Standardized Certification Of Linux ISVs

- Hitachi, Alvarion Team Up On Global WiMax Technology

- Find the latest news, features and reviews relating to "interoperability" from CMP's TechSearch.

interoperability

n. 1. the ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces and to use the services so exchanged to enable them to operate effectively together.

2. the condition achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them and/or their users.

See the Introduction, Abbreviations and Pronunciation for further details.
Military Dictionary

interoperability

(DOD, NATO) 1. The ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces and to use the services so exchanged to enable them to operate effectively together. 2. (DOD only) The condition achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them and/or their users. The degree of interoperability should be defined when referring to specific cases.

WordNet

Note: click on a word meaning below to see its connections and related words.

The *noun* interoperability has one meaning:

Meaning #1: (computer science) the ability to exchange and use information (usually in a large heterogeneous network made up of several local area networks)

Wikipedia

interoperability

Interoperability is connecting people, data and diverse systems. The term can be defined in a technical way or in a broad way, taking into account social, political and organizational factors.

(Interop is also the name of several annual networking product trade shows.)

Definition

The IEEE defines interoperability as:

> the ability of two or more systems or components to exchange information and to use the information that has been exchanged.[1]

Telecommunications

In telecommunication, the term can be defined as:

1. The ability of systems, units, or forces to provide services to and accept services from other systems, units or forces and to use the services exchanged to enable them to operate effectively together.
2. The condition achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them and/or their users. The degree of interoperability should be defined when referring to specific cases.

Source: from Federal Standard 1037C and from the Department of Defense Dictionary of Military and Associated Terms in support of MIL-STD-188.

In two-way radio, interoperability is composed of three dimensions:

- compatible communications paths (compatible frequencies, equipment and signaling),
- radio system coverage or adequate signal strength, and;
- scalable capacity.

Software
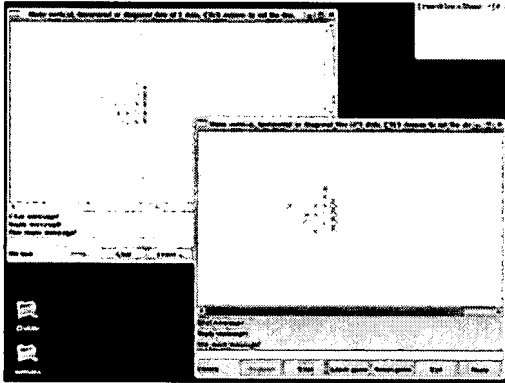
Interoperability: playing the two role network game, when one of the player clients (top left) runs under <u>Sun Microsystems</u> and another under <u>GNU Classpath</u> with <u>JamVM</u>. The applications execute the same <u>bytecode</u> and interoperate using the standard <u>RMI-IIOP</u> messages for communication

With respect to <u>software</u>, the term interoperability is used to describe the capability of different programs to exchange data via a common set of business procedures, and to read and write the same <u>file formats</u> and use the same <u>protocols</u>. (The ability to execute the same <u>binary code</u> on different <u>processor</u> platforms is 'not' assumed to be part of the interoperability definition!) The lack of interoperability strongly implies that the described product or products were not designed with <u>standardization</u> in mind. Indeed, interoperability is not taken for granted in the non-standards-based portion of the computing and <u>EDP</u> world. According to ISO/IEC 2382-01, *Information Technology Vocabulary, Fundamental Terms*, interoperability is defined as follows: *"The capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little or no knowledge of the unique characteristics of those units"*. [2]

This definition focuses on the technical side of interoperability, while it has also been pointed out that interoperability is often more of an organizational issue. In other words, interoperability frequently has a major impact on the organization concerned, including issues of ownership (do people want to share their data?),

staff (are people prepared to undergo training?) and usability. In this context, a more apt definition is captured in the term "business process interoperability". Interoperability can have important economic consequences, such as network externalities. If competitors' products are not interoperable (due to causes such as patents, trade secrets or coordination failures), the result may well be monopoly or market failure. For this reason, it may be prudent for user communities or governments to take steps to encourage interoperability in various situations. In the United Kingdom, for example, there is an eGovernment-based interoperability initiative called e-GIF. As far as user communities, Neutral Third Party is creating standards for business process interoperability. Another example of a neutral party is the RFC documents from the Internet Engineering Task Force (IETF).

Achieving Interoperability

Interoperability can be achieved in four ways: through product engineering, industry/community partnership, access to technology and IP, and implementation of standards.

Interoperability as a question of power and market dominance

Interoperability tends to be regarded as an issue for experts and its implications for daily living are sometimes underrated. The case of Microsoft vs. the European Commission shows how interoperablity concerns important questions of power relationships. In 2004, the European Commission found that Microsoft had abused its market power by deliberately restricting interoperability between Windows PCs and non-Microsoft work group servers. By doing so, Microsoft was able to acquire a dominant market position for work group server operating systems, the heart of corporate IT networks. Microsoft was ordered to disclose

complete and accurate interface documentation, which will enable rival vendors to compete on an equal footing ("the interoperability remedy"). As of June 2005 the Commission is market testing a new proposal by Microsoft to do this, having rejected previous proposals as insufficient.

Recent Microsoft efforts around interoperability may indicate a shift in their approach and level of commitment to interoperability. These efforts including the migration of Microsoft Office file formats to ECMA Office Open XML, and several partner interoperability agreements, most notably their recent collaboration agreement with Novell[3][4][5].

Interoperability has also surfaced in the Software patent debate in the European Parliament (June/July 2005). Critics claim that because patents on techniques required for interoperability are kept under RAND (reasonable and non discriminatory licensing) conditions, customers will have to pay licence fees twice: once for the product and, in the appropriate case, once for the patent protected programme the product uses.